

Trying to control pain can be a double-edged sword, say scientists

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Scientists have shown for the first time why a feeling of control helps us reduce pain. The research, carried out at the Wellcome Trust Centre for Neuroimaging at UCL, London, has implications for how patients with persistent pain can cope with what is often a debilitating condition.

Using fMRI scanners, which allow scientists to examine how the brain operates, the research, led by Dr Katja Wiech and Dr Raffael Kalisch, showed that when people feel that they can control their pain, an area of their prefrontal cortex associated with a feeling of security is activated. The findings are published in the *Journal of Neuroscience* today and have been welcomed by the Expert Patients Programme.

More significantly, the team went on to show that when faced with pain beyond their control, people who tend to feel more in control of their own lives show a lower response in the prefrontal cortex, indicating that they are less effective in coping with pain than those who don't expect to have control.

"Patients with persistent pain report that often it is not the pain itself that makes their situation unbearable, but the fact that there is nothing they can do against it which makes them feel helpless," explains Dr Wiech. "Unfortunately, this feeling of uncontrollability in turn tends to worsen the pain. On the other hand, teaching persistent pain patients psychological coping strategies to handle their pain usually does help reduce its effects."

Dr Wiech and her team set up an experiment to investigate how people cope with pain. In the first stage, volunteers were given an electric stimulus to the backs of their hands and told that they could stop the pain at any point. In the second stage, they were told that the decision to stop the pain was out of their control and could only be stopped by a person or computer outside the room.

Using one of the centre's fMRI scanners, the researchers were able to show that a number of areas of the brain were activated according to whether the volunteer felt in control of the pain. Most important was the anterolateral prefrontal cortex, which is associated with successful coping with feelings of anxiety.

The findings may have implications for future therapeutics, believes Dr Wiech.

"If we were able to stimulate the prefrontal cortex through psychological intervention, medication or some other stimulus, we could help reduce the pain felt by a patient," she says. "However, we are still some way of this."

The team also analysed the subjects' outlook on life, examining whether they felt in control of their own lives. They found that whilst the subjects' outlook did not affect the anterolateral prefrontal cortex when they controlled the stimulus, when they were not able to stop the painful stimulation subjects with no control expectations were better at activating this brain region than those with a strong control belief.

The findings support the practice of "acceptance-based therapy" whereby doctors focus on training patients to cope with the pain rather than attempting to make the pain go away.

"Throughout our lives, we are taught that we should aim to take control

of our lives, to get the best job, find the best partner," says Dr Wiech. "But sometimes we should accept what we have and make the most of it. Rather than constantly battling pain, our research supports the view that it is better to provide a patient with the tools to cope with his or her persistent pain."

The findings are welcomed by Pete Moore, lead trainer in pain management for the Expert Patients Programme Community Interest Company.

"This is interesting work by UCL. We have found that many people with pain are over achievers and tend to do more than they have to. This is why when people with persistent pain attend an Expert Patients Programme they are provided with a toolbox of self-management skills to support them to manage their day-to-day pain."

Source: Wellcome Trust

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